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Analysis of the Relationship Between Economic Freedom and the Stability of Stock Prices

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ANALYSIS OF THE RELATIONSHIP BETWEEN ECONOMIC FREEDOM AND THE STABILITY OF STOCK PRICES

by

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ABSTRACT

Analysis of the Relationship between Economic Freedom and the Stability of Stock Prices

by

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The objective of this study is to re-investigate the relationship between macroeconomic factors and the price stability of individual securities by using an American Depositary Receipts (ADRs) sample. Instead of using a large sample of 327 ADRs in Blau, Brough, and Thomas' (2013) study, I focused on a panel data of 150 ADRs from 30 countries over the 2003-2007 period. Empirical evidence is provided to support whether economic freedom in the ADR home country reduces ADR volatility. In this replication study, the analysis is conducted within the pooled ordinary least square as the method of estimation. The findings show that economic freedom does have significant impact on ADR volatility.

(30 pages)

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Jinyu Qiu

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I. INTRODUCTION

Over the past two decades, many empirical studies have reached the conclusion that nations which have fewer restrictions on private agents and transactions tend to have higher levels of economic growth. (Heckelman, 2000). Economic freedom is that aspect of human liberty that is concerned with the material autonomy of the individual in relation to the state and other organized groups (Beach and Kane, 2008). Economic freedom is most commonly associated with a viewpoint of the classical liberal, which emphasizing free markets and private property. Classical liberals argue that economic freedom is embodied in the rule of law, property rights and freedom of contract. Friedrich Hayek was an Austrian and British economist and philosopher in the 20th-century. He was an advocate of free-market capitalism and has pointed out that the certainty of law contributed to the prosperity of Western world more than any other single factor (Hayek, 1953). For Hayek, economic growth is only possible where human freedom is maximized, and freedom is ordered through law. In some sense, the rule of law is required for economic freedom, because it is a necessity to ensure that human interaction is orderly and served the best interests of all society. In other words, free markets and the protection of private property rights lead to prosperity. Inspired by Hayekian theory, many studies examine the linkage between economic freedom and growth. Economic institutions, such as private property, rule of law, and contract enforcement are extremely important for economic growth and development (Williamson and Mathers, 2011). While much of the literature has focused on the relationships between economic freedom and financial development. For instance, Stocker (2005) showed that countries that experience an increase in economic freedom will contemporaneously realize high equity market returns. Roychoudhury and Lawson (2010)

find that countries with higher values on the Economic Freedom of the World index, enjoy lower sovereign bond default risk as measured by Moody's credit ratings and by sovereign bond spreads over ten-year US Treasury bonds. More insightful, Blau, Brough, and Thomas (2013) focused on a pivotal effect: the macro-level features of the volatility of individual securities. They focus on volatility of American Depositary Receipts (ADRs) prices while conditioning on ADR's home-country macroeconomic characteristics that relate to economic freedom. This direction is different from other studies which investigate the level of ADR liquidity on home-market features that measure the quality of legal and political institutions (Eleswarapu and Venkataraman, 2006). They attempted to test the variation in macro-level conditions across of a sample in individual securities by examining the volatility of 327 ADRs with underlying firms from 41 countries of the world during a five-year period (2003 to 2007).

An important topic in asset pricing research is the relation between stock market volatility and stock returns. Volatility is a statistical measure of the dispersion around the mean or average return of a security's price to change over time. Volatility has become an essential element for many reasons. For the market, volatility is the measure for a functionality of financial market, because it is a significant factor that affects the flow of capital into equity markets. For securities, volatility of the stock is a significant factor in determining the bid-ask spread. Prior study showed that individual firms' stock return volatility rises after stock prices fall (Black, 1976; Christie, 1982; Cheung and Ng, 1992). Duffee (1995) documented that a strong positive relation between firm stock returns and volatility and this positive relation is strongest for both small firms and firms with little financial leverage.

The main objective for this replication study is to re-examine the effect of macroeconomic characteristics on the volatility of ADRs while conditioning on the level of the home country's economic freedom. Instead of a large sample of 327 American Depositary Receipts (ADRs) in Blau, Brough, and Thomas' study, I focus on a panel data of 30 countries by using a sample of 150 ADRs over the 2003-2007 period.

The motivation of this replication study has many reasons. First, there is a long tradition in economics that links economic freedom to positive effects. Based on an insight of political economy, it is a meaningful learning by examining the relationship between economic freedom and financial markets. Second, the study progress will contribute to develop my individual career as well as mainly achieve the academic purpose. Besides, by using a financial market indicator to performance the value of economic freedom may have significant implications for my research process. Thus, it is reasonable to undertake study of the relation between the volatility of security prices and the degree of economy freedom.

In this study, I use the Economic Freedom of the World Index (EFW) as the measure of economic freedom. The Fraser Institute has published annual "Economic Freedom of the World Index" reports since 1990 for a considerable number of countries, which have been widely used in a range of studies. Lawson and Block developed a good numerical measure of economic freedom and showed that it is strongly correlated with economic growth (Holcombe, 1998). Economic freedom contains several components, including (1) the size of a government, (2) a stable monetary system, (3) secure private property rights, (4) an impartial legal system of credit, labor, and business, and (5) low barriers to international exchange. I gather data of this five components that make up the economic freedom score for each country in the sample. Regarding other component

measures, I also obtain the following sub-components of the index: credit market regulation score and home-country government market control score.

II. METHODOLOGY

I calculate volatility in two different ways. First, I calculate the standard deviations of daily raw returns in each year (σ_{total}). Second I estimate the following equation at the daily level.

$$R_{i,t} = \alpha + \beta_1 R_{m,t} + \varepsilon_{i,t} \quad (1)$$

In equation (1), let $R_{m,t}$ denotes the return on S&P Composite Index for security *m* at day *t*. Then calculate idiosyncratic volatility ($\sigma_{idiosyncratic}$) by estimating the standard deviation of daily residuals $\varepsilon_{i,t}$ obtained from equation (1). After calculating total volatility and idiosyncratic volatility, I find an inverse correlation between economic freedom and ADR volatility. I also examine the correlation between ADR volatility and the components of economic freedom. I find that the strength of property rights (*Prop*), the soundness of money (*Sound$*), and the level of free trade (*Trade*) are each negatively related to ADR volatility. The components of government size (*GovSize*), general regulation (*Reg*), credit market regulation (*CrdtReg*), and market control (*MktCont*) had initial scores that scaled from zero to 10, 10 being the smallest government size, the least regulation, the lowest market control, and the lowest level of credit market regulation. For interpretation purposes, I subtract these initial scores from 10 to obtain scores that are represent the inverse relation of these variables with the economic freedom score. Since I subtract the components of *GovSize*, *Reg*, *CrdtReg*, and *MktCont* from 10 to obtain these rescaled variables, I find that each of these economic freedom components lead to more price instability. These findings support that an important relation between economic freedom and the stability of stock prices. After this analysis, I test the relationship between ADR volatility and some macro-level characteristics that are related to economic freedom. For instance, results prove that

economic freedom is inversely correlated to the level of home country's corruption and amount of Official Development Assistance (*ODA*). Besides economic freedom is positively related to the home country's GDP and amount of Foreign Direct Investment (*FDI*). These results from my analysis also verify that macro-level characteristics have an effect on the stability of prices. Finally, I find that large portion of home country's stock volume in GDP also reduces ADR volatility.

When regressing volatility on controls, I employ the Pooled Ordinary Least Square regression approach and fixed effect are performed. With 5 years of panel data, I can use the fixed effects transformation to eliminate the unobserved effect. A Hausman test rejected random effects model which mean an *F*-test finds differences across the cross-section and time-series observations (Blau, Brough, and Thomas, 2013), thus, all analysis is based on the results by using the Pooled Ordinary Least Square regression approach. In all models, I only include one institutional variable at a time to avoid multicollinearity issue. I start the presentation with the key variables of our interest: aggregate score of Economic Freedom Index and followed by all the individual components.

III. DATA DESCRIPTION

To assure that there are no data errors and to derive the appropriate control variables for the main estimations. I replicate the original data by using a portion sample of ADRs from Wharton Research Data Services (WRDS). This data contain 150 ADRs from 30 countries across the world over the period of five years from 2003-2007. The ADR characteristics are calculate from the analysis of four distinct components which are daily prices, market capitalization, share turnover (daily volume divided by shares outstanding), and bid-ask spreads. In the economic freedom data part, from the Frazer Institute, the five component scores are equally weighted and averaged to get an overall economic freedom (*EF*) score for each country. The economic freedom score is count between zero and ten. Scores closer to ten represent home countries that has more economic freedom. In the home country characteristics dataset, I obtain a corruption score from Transparency International (Corruption Perception Index). Also, I get data on *GDP*, *FDI*, *ODA*, and proportion of home country stock volume in GDP from the World Bank's Development Indicators dataset.

Table 1 shows the descriptive statistics of the independent and dependent variables. Panel A reports the estimates of my volatility measures. I find that the mean estimate for σ_{total} is 0.0224 while the mean for $\sigma_{idiosyncratic}$ is 0.0206. Panel B reports that the average ADR in this sample has a price of $33.85 and a market capitalization of nearly 176 million. Then the panel reports that mean turnover is 10.42 percent. Finally, the average closing daily bid-ask spread is $0.14. Panel C shows the summary statistics for the measure of economic freedom and the five components for the 30 home countries in this sample. There are three components directly related to economic freedom. Property right protection

(*Prop*), the soundness of money (*Sound$*), and the level of free trade (Trade) are each directly related to the economic freedom score. However, the size of the federal government (*GovSize*), the strength of regulation, the level of market control, and the strength of credit market regulation are each inversely related to the economic freedom score. In Panel C, I find that he mean of *EF* for the data used in this sample is 7.52 while the minimum is 5.96 and the maximum is 9.13. This relatively high mean *EF* score from my result might prove the fact that only relatively free countries can have firms of sufficient size to issue ADRs.

Panel D shows the statistics that describe the other home countries macro-level variables. These variables are also correlated with economic freedom. Corruption in the home country (*Corrupt*) has a mean score of 3.41. The mean GDP per capita (*GDP*) of the home country is $27,635 (in current US $ for 2003-2007). The mean of net official development assistance (*ODA*) is $228 million (in current US $ for 2003-2007) while the mean of net foreign direct investment inflows (*FDI*) is $49.64 billion (current US dollars for 2003-2007). The last variable is measuring the trading volume on the home country's stock market (*StockMkt*), the mean trading volume as a percentage in GDP is 66.75%.

IV. EMPIRICAL TEST AND RESULTS

4.1. Pearson correlation analysis between Economic Freedom and other Macro-Level Characteristics

In accordance with the Blau, Brough, and Thomas' paper, I estimate the correlation between the economic freedom index and the components and sub-components. Then, I also examine the correlation between economic freedom and the other macroeconomic factors. In Table 2, Panel A reports the correlation matrix for economic freedom and its components, while Panel B shows the correlation between economic freedom and the other macro-level characteristics. The partial correlations of the economic freedom components in Table 2 shows that, government size, the level of regulation, market control, and credit market regulation are each mostly negatively related to the economic freedom index with p-value less than 0.01 per cent. Market control and level of free trade are strongly negatively correlated, $r = -0.8517$, $p < 0.01$ as expected, thereby the less regulatory control generates more open market. The exception is that property right protection, the soundness of money, and the level of free trade are directly related to economic freedom. These relationships are in support of original paper, while the components with the highest correlation with economic freedom are *Reg* (correlation = -0.869, p-value = 0.000), *Prop* (correlation = 0.8247, p-value = 0.000), and *MktCont* (correlation = -0.6387, p-value = 0.000). I find that *GovSize* has the lowest correlation with the economic freedom score (correlation = -0.1755, p-value = 0.000) in these components.

Panel B reports the matrix examining the correlation between the economic freedom index and the other macro-level characteristics. The first row of Panel B shows that economic freedom is inversely related to *Corrupt* (correlation = -0.8933, p-value =

0.000), *ODA* (correlation = -0.6814, p-value = 0.000) and *FDI* (correlation = -0.11, p-value = 0.002). In these correlation relationships, *Corrupt* appears to be most correlated with economic, while *FDI* appears to be least correlated although the correlation coefficient for *FDI* is still significant at the 0.01 level (correlation = 0.11, p-value = 0.002).

4.2. Pearson correlation analysis between ADR Volatility and Economic Freedom

In this part of the study, I examine the correlation between our two measures of ADR volatility and economic freedom scores. I estimate volatility two different ways in Panel A. Table 3 shows the estimated correlation coefficients for economic freedom and its components. Column [1] shows the results for total ADR volatility while columns [2] presents the results for idiosyncratic volatility.

Table 3 reports that volatility is significantly correlated with the economic freedom in the ADR home countries. In my dataset, I do not find that ADR volatility is related to the size of the home country's government size, level of general regulation, and credit market regulation. However, I find that volatility is negatively related to *Prop*, *Sound$*, and *Trade* indicating that greater property right protection, more sound money, and higher levels of free trade can improve the stability of ADR prices.

As I mentioned before, Pooled OLS regression approach is used in this study. Since I need to control for one variable at a time for other factors that influence ADR volatility in a multivariate framework. Therefore, I estimate the initial equation using pooled stock-year data.

$$\sigma_{j,i,t} = \alpha + \beta_1 ln(price_{j,i,t}) + \beta_2 ln(size_{j,i,t}) + \beta_3 Turn_{j,i,t} + \beta_4 Spread_{j,i,t} + \beta_5 EF_{j,i,t} + \varepsilon_{i,t} \quad (2)$$

The dependent variables include volatility estimates (in percent) for each ADR *i* during year *t*. I estimate equation (3) separately for each volatility measure *j* where *j* is defined as total volatility, and idiosyncratic volatility. I include as independent variables several control variables. The natural log of the price of ADR *i* during year *t*, the natural log of the market size, the share turnover, and the average daily bid-ask spread. The key variables of our interest is *EF*, which is the economic freedom score for each ADR *i* during year *t* and followed by all the individual components of the economic freedom score. According to Blau, Brough, and Thomas' paper, I estimate equation (2) using two-way fixed effects, since they found a Hausman test rejects the presence of random effects while an F-test finds differences across the cross-section and time-series observations.

Table 4 reports the results from estimating equation (2). Panel A presents the estimate for total volatility. When examining the estimates for the control variables, I find that ADRs with lower prices, less market capitalization, and higher turnover have higher volatility. However, the estimate for control variable $ln(size_{i,t})$ is negative but statistically insignificant, $p > 0.05$. After including these controls, I find in column [1] that the estimate for *EF* is negative and significant (estimate = -0.0029, p-value = 0.000). In columns [2] through [8], I include each of the seven components of economic freedom separately. In column [2], I find that the estimate for *GovSize* is close to zero (estimate = 0.0008, p-value = 0.029). In column [3], I find that the estimate for *Prop* is statistically zero (estimate = 0, p-value = 0). Columns [4] and [5] report that, after controlling for other factors that influence ADR volatility, *Sound$*, and *Trade* produce estimates that are negative and statistically significant. Columns [6] through [8] show the results when I include *Reg*, *MktCont*, and *CrdtReg* as independent variables. The estimates for these variables are

positive and statistically significant. These results are similar to those reported in Table 3 where I examine the univariate correlation. Further, the conclusions I obtain from Panel A and Panel B are similar to the conclusions that obtain from original paper by Blau, Brough, and Thomas when I include total volatility and idiosyncratic volatility as our dependent variables. However, I find that all estimates of $ln(size_{i,t})$'s p-value in Panel B are not as significant at 0.1 level as that reported in the original paper. The term of $size_{i,t}$ represents the market capitalization, which calculate by the daily stock price times the number of shares outstanding. Due to the limited power of the sample I estimate, the number of shares outstanding is probably not strong enough to offer a significant result. Besides, it can be noticed that based on Panel A and Panel B, the adjusted R-squared statistics range from 0.3531 to 0.3823 and 0.3998 to 0.4230, respectively.

It is noted that all the results provided above are all consistent with the results provided by the subsection of original paper, which confirmed that improvements in economic freedom lead to more stable stock prices. Thus, to reduce ADR volatility, property right protection, sound money, and greater free trade are definite required. On the contrary, higher volatility could result from the level of regulation (both generally and specifically in credit markets) and greater capital market controls.

4.3 The Relation between ADR Volatility and other Macro-Level Characteristics

Similarly, in this subsection, the relation between ADR volatility and other economic freedom related macro-level characteristic will explore. Consistent with the results from the original paper, the gross domestic product, foreign direct investment, and the trading volume on a country's stock market are find each directly related to economic

freedom, while the level of corruption and *ODA* are negatively correlated with economic freedom.

Table 5 reports the correlation between two different ways of estimating volatility and the macro-level characteristics discussed above by using daily CRSP returns. A similar estimate correlation is find across both total and idiosyncratic volatility. As shown in column [2], the positive correlation (correlation = 0.1347, p-value = 0.000) suggests a less corruption leads to more stable ADR prices. Another significant positive relation is find between *ODA* and ADR volatility (correlation = 0.1481, p-value = 0.000), which prove the idea that security prices could also be destabilized by the official development assistance. At the same time, *GDP* and *FDI* (correlation = -0.1056, p-value = 0.004), (correlation = -0.0855, p-value = 0.019) are negatively related with ADR volatility, respectively, suggesting that a smaller economies and countries with a greater foreign direct investment tend to have a higher ADR volatility. The result of trading volume on the capital markets of ADR home countries in column [2] shows a significant negative relation with ADR volatility. However, compared with column [2], column [1] shows a similar correlation, but less significance (correlation = -0.1056, p-value = 0.004) of trading volume on the capital markets of ADR home countries and ADR volatility.

To investigate the other factors that influence the level of ADRs volatility, I add the macro-level characteristics in the following equation by using pooled stock-year data. Modified equation (3) shows below, which has similar dependent and independent variables as I described in equation (2). The variables included in *MACRO* are *Corrupt*, *GDP*, *ODA*, *FDI* and *StockMkt* in this equation.

$$\sigma_{j,i,t} = \alpha + \beta_1 ln(price_{j,i,t}) + \beta_2 l n(size_{j,i,t}) + \beta_3 Turn_{j,i,t} + \beta_4 Spread_{j,i,t} + \beta_5 MACRO_{j,i,t} + \varepsilon_{i,t} \quad (3)$$

Again, according to the original paper, a Hausman test rejected the presence of random effects. I therefore estimate equation (3) in two-way fixed effects. Table 6 reports the results from estimating equation (3), Panel A and B present the results when use total volatility and idiosyncratic volatility, respectively. Similar results are obtained from both panels. Thus, for brevity, I only discuss the results in Panel A. Similar to my findings in Table 4, and the estimates for the control variables suggest that ADRs with lower prices, less market capitalization, and higher turnover have higher volatility. In column [1], after controlling for other independent variables, *Corrupt* results a positive and significant estimate (estimate = 0.0007, p-value = 0.000) indicating that ADRs with more corrupt home countries have higher volatility. In column [2], the estimate for GDP is zero and significant (estimate = 0, p-value = 0.046). This result indicates that home countries' GDP does not have effect on ADR volatility. I also find that ODA does not have any contribution on volatility in column [3]. I do not find evidence that *FDI* and *StockMkt* produce estimates that are statistically different from zero.

V. CONCLUSION

In this replication study, I re-examine the linkage between macroeconomic characteristics that are related to economic freedom and the stability of security prices. To reach the result, I use a sample setting of ADRs, which reflect the variation in macroeconomic conditions while focusing on stock-specific volatility. After choosing the sample, first, I gather the home country's economic freedom score and macro-level characteristics data. Second, I explore the correlation between economic freedom and the components included that make up economic freedom as well as other macro-level factors in the home countries. Then I calculate the volatility with 150 ADRs from 30 countries across the globe that all meet the rigorous listing requirements of the major stock exchanges in the U.S. Within two measures of volatility (total volatility and idiosyncratic volatility), the pooled OLS is used in the estimation process. After examining the effect of economic freedom score and other macro-level factors in the home countries of ADRs on price volatility. The findings illustrate that greater economic freedom in the ADR's home country results in less volatility in security prices. Besides, I also find that sound money, and more open market leads to more stable ADR prices. Furthermore, I only conclude that stronger government control on market results in less stable ADR prices. The weak evidence shows that the size of government still effects on price volatility, but not significantly. At the same time, higher general regulation and credit market regulation lead to less stable ADR prices, but not statistically significant as well. GDP and development assistance do not have effect on volatility of ADRs. In other macro-level factors tests, the results suggest that more corrupt countries leads more unstable ADRs prices.

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Table 1
Summary Statistics
This table provides statistics that describe the sample used throughout the analysis. I estimate volatility two different ways in Panel A. First, I calculate the standard deviations of daily raw returns in each year (σ_{total}). Second I calculate idiosyncratic volatility ($\sigma_{idiosyncratic}$) by estimating the standard deviation of daily return residuals obtained from a standard market model. Panel B reports different ADR characteristics. From WRDS I obtain prices (*price*), outstanding shares, and daily closing bid-ask prices. In Panel C, I gather data from Frazer Institute and obtain economic freedom scores (*EF*) and scores from each of the components of the economic freedom score. *GovSize* is score from zero to 10 measuring the size of the home country's federal government. *Prop* is a score from zero to 10 measuring the level of property right protection. *Sound$* is a 0 to 10 score measuring the soundness of money in each home country. *Trade* is a score measuring the level of free trade. *Reg* is a score measure the strength of general regulation. *MktCont* is a score regarding the level of government control on markets. *CrdtReg* is a score measure the strength of credit market regulation. In Panel D, I obtain data from the Transparency International Corruption Perception Index that provides a scored based on the level of corruption (*Corrupt*) in each of the home countries. From World Bank's World Development Indicators database I gather data on *GDP*, *ODA*, and foreign direct investment (*FDI*) data.

Panel A. Volatility Estimates					
	Mean	Medium	Stand. Deviation	Minimum	Maximum
	[1]	[2]	[3]	[4]	[5]
σ_{total}	0.0224	0.0196	0.0128	0.0086	0.1706
$\sigma_{diosyncratic}$	0.0206	0.0176	0.0129	0.0074	0.1701
Panel B. ADR Characteristics					
price	33.8459	26.0900	31.8199	0.1550	538.9200
size	176,323,312	35,439,222	407,462,011	34,776	5,318,105,520
turn	0.0104	0.0045	0.0580	0.0000	10.8064
spread	0.1398	0.0500	0.4015	0.0000	37.2100
Panel C. Economic Freedom Components					
EF	7.5261	7.7300	0.6870	5.9600	9.1300
GovSize	3.8482	3.7128	1.0942	0.6980	6.1937
Prop	7.1267	7.4779	1.2845	3.8013	9.1381
Sound$	9.0434	9.4491	0.8563	4.2860	9.7763
Trade	7.9884	8.2260	0.8533	5.5962	9.6029
Reg	2.7221	2.6016	0.9751	1.0176	5.4633
MktCont	4.6331	3.8462	3.0990	0.7692	10.0000
CrdtReg	1.1171	0.6667	1.0783	0.0000	4.2396

Panel D. Other Home Country Characteristics					
	Mean	Medium	Stand. Deviation	Minimum	Maximum
	[1]	[2]	[3]	[4]	[5]
Corrupt	3.4063	2.7000	2.1356	0.3000	8.1000
GDP	27635.62	33982.95	17961.53	638.15	87772.69
ODA	228,660,343	0.00	511,371,716	0.00	2,935,590,000,
FDI	49,639,024,476	22,410,807,389	81,411,617,552	623,291,744	734,000,000,000
StockMkt	66.75	62.20	54.63	0.4849	390.39

Table 2
Correlation Coefficients
This table reports Pearson correlation coefficients. Panel A reports the results for the economic freedom score (*EF*) and the components included that make up economic freedom. Panel B presents the correlation estimates for *EF* and the other macro-level factors. *Corrupt* is a score from zero to 10 based on the level of corruption in the home country. *ODA* is the amount of Official Development Assistance. *FDI* is the foreign direct investment in each home country. *StockMkt* is the percentage of aggregate trading volume in GDP from each home country.

Panel A. Economic Freedom Components

	EF	*Govsize*	*Prop*	*Sound$*	*Trade*	*Reg*	*MktCont*	*CrdtReg*
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
EF	1.0000	-0.1755	0.8247	0.7960	0.7819	-0.8690	-0.6387	-0.6432
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GovSize		1.0000	0.2132	0.2284	0.1082	0.1131	-0.1645	0.0753
			(0.000)	(0.000)	(0.003)	(0.002)	(0.000)	(0.038)
Prop			1.0000	0.7248	0.5958	-0.6978	-0.4863	-0.4674
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sound$				1.0000	0.7235	-0.5947	-0.6299	-0.485
					(0.000)	(0.000)	(0.000)	(0.000)
Trade					1.0000	-0.583	-0.8517	-0.4671
						(0.000)	(0.000)	(0.000)
Reg						1.0000	0.4802	0.7520
							(0.000)	(0.000)
MktCont							1.0000	0.2555
								(0.000)
CrdtReg								1.0000

Panel B. Other Macro-Level Characteristics

	EF	*Corrupt*	*GDP*	*ODA*	*FDI*	*StockMkt*
	[1]	[2]	[3]	[4]	[5]	[6]
EF	1.0000	-0.8933	0.7060	-0.6814	0.1100	0.3624
		(0.000)	(0.000)	(0.000)	(0.006)	(0.000)
Corrupt		1.0000	-0.8048	0.6359	-0.2235	-0.3235
			(0.000)	(0.000)	(0.000)	(0.000)
GDP			1.0000	-0.6051	0.1918	0.2334
				(0.000)	(0.000)	(0.000)
ODA				1.0000	-0.0227	-0.1725
					(0.986)	(0.000)
FDI					1.0000	0.3053
						(0.000)
StockMkt						1.0000

Table 3
Correlation
The table reports the correlation between two volatility measures and economic freedom scores. I include the economic freedom score (*EF*) and the components included that make up economic freedom. *GovSize* is score from zero to 10 measuring the size of the home country's federal government. *Prop* is a score from zero to 10 measuring the level of property right protection. Sound$ is a 0 to 10 score measuring the soundness of money in each home country. *Trade* is a score measuring the level of free trade. *Reg* is a score measure the strength of general regulation. *MktCont* is a score regarding the level of government control on markets. *CrdtReg* is a score measure the strength of credit market regulation. Corresponding p-values are reported in parentheses below each correlation coefficient.

	$\sigma(total)_{i,t}$	$\sigma(diosyncratic)_{i,t}$
	[1]	[2]
EF	-0.1052	-0.0843
	(0.004)	(0.02)
GovSize	-0.0671	-0.0673
	(0.065)	(0.064)
Prop	-0.1213	-0.1099
	(0.001)	(0.002)
Sound$	-0.2088	-0.1919
	(0.000)	(0.000)
Trade	-0.1026	-0.0838
	(0.005)	(0.021)
Reg	0.0270	-0.0024
	(0.458)	(0.948)
MktCont	0.1438	0.1291
	(0.000)	(0.000)
CrdtReg	0.0704	0.0527
	(0.053)	(0.147)

Table 4
Regression
This table reports the results from estimating the following equation using pooled stock-year data.

$$\sigma_{j,i,t} = \alpha + \beta_1 ln(price_{j,i,t}) + \beta_2 ln(size_{j,i,t}) + \beta_3 Turn_{j,i,t} + \beta_4 Spread_{j,i,t} + \beta_5 EF_{j,i,t} + \varepsilon_{i,t}$$

The dependent variables include volatility estimates for each ADR *i* during year *t*. I estimate equation (2) separately for each volatility measure *j* where *j* is defined as total volatility (Panel A), and idiosyncratic volatility (Panel B). I include as independent variables several control variables. The natural log of the price of ADR *i* during year *t*, the natural log of the market capitalization, the share turnover (volume scaled by shares outstanding), and the average daily bid-ask spread. The variable of interest is *EF*, which is the economic freedom score for each ADR *i* during year *t*. Because of the potential for severe multicollinearity due to the high level of correlation between components and the economic freedom score, I do not include all of the components and economic freedom score in one regression. p-values are reported in parentheses below each estimate.

Panel A. Total Volatility								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Intercept	0.0669	0.0401	0.0391	0.0652	0.0639	0.0416	0.0426	0.0418
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Ln(price_{i,t})$	-0.0078	-0.0079	-0.0082	-0.0072	-0.0078	-0.0077	-0.0076	-0.0079
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Ln(size_{i,t})$	-0.0001	0	0.0002	-0.0002	-0.0001	-0.0001	-0.0001	0
	(0.6855)	(0.9741)	(0.4728)	(0.4951)	(0.7107)	(0.6084)	(0.6473)	(0.9596)
$Turn_{i,t}$	0.1333	0.1413	0.1246	0.1322	0.1338	0.1336	0.1289	0.1323
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Spread_{i,t}$	0.0198	0.0008	0	-0.0022	-0.0023	0.0015	0.0006	0.0016
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$EF_{i,t}$	-0.0029							
	(0.000)							
$GovSize_{i,t}$		0.0008						
		(0.029)						
$Prop_{i,t}$			0					
			(0.000)					
$Sound\$_{i,t}$				-0.0022				
				(0.000)				
$Trade_{i,t}$					-0.0023			
					(0.000)			
$Reg_{i,t}$						0.0015		
						(0.000)		
$MktCont_{i,t}$							0.0006	
							(0.000)	
$CrdtReg_{i,t}$								0.0016
								(0.000)
Adj R^2	0.3726	0.3531	0.3823	0.3706	0.3723	0.3620	0.3674	0.3669

Panel B. Idiosyncratic Volatility								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Intercept	0.068	0.0429	0.0431	0.0669	0.0659	0.0450	0.0457	0.0451
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Ln(price_{i,t})$	-0.0081	-0.0083	-0.0086	-0.0077	-0.0082	-0.008	-0.008	-0.0082
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Ln(size_{i,t})$	-0.0003	-0.0002	0	-0.0004	-0.0003	-0.0004	-0.0004	-0.0002
	(0.211)	(0.4585)	(0.8599)	(0.1312)	(0.2207)	(0.1847)	(0.1924)	(0.3597)
$Turn_{i,t}$	0.0121	0.0128	0.0113	0.012	0.0121	0.0122	0.0117	0.012
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Spread_{i,t}$	0.0209	0.0219	0.0245	0.0198	0.0209	0.0216	0.02	0.0233
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$EF_{i,t}$	-0.0026							
	(0.000)							
$GovSize_{i,t}$		0.0009						
		(0.0112)						
$Prop_{i,t}$			0					
			(0.000)					
$Sound\$_{i,t}$				-0.0002				
				(0.000)				
$Trade_{i,t}$					-0.0022			
					(0.000)			
$Reg_{i,t}$						0.0012		
						(0.0015)		
$MktCont_{i,t}$							0.0005	
							(0.000)	
$CrdtReg_{i,t}$								0.0015
								(0.000)
Adj R^2	0.4140	0.3998	0.4230	0.4118	0.4151	0.4029	0.4103	0.4093

Table 5
Correlation
The table reports the correlation between two volatility measures and economic freedom scores. *Corrupt* is a score from zero to 10 based on the level of corruption in the home country. *GDP* is the gross domestic product per capital. *ODA* is the Official Development Assistance amount. *FDI* is the foreign direct investment in each home country. *StockMkt* is the aggregate trading volume in each home country. Corresponding p-values are reported in parentheses below each correlation coefficient.

	$\sigma(total)_{i,t}$	$\sigma(diosyncratic)_{i,t}$
	[1]	[2]
Corrupt	0.1522	0.1347
	(0.000)	(0.000)
GDP	-0.1182	-0.1056
	(0.001)	(0.004)
ODA	0.1586	0.1481
	(0.000)	(0.000)
FDI	-0.0712	-0.0855
	(0.05)	(0.019)
StockMkt	-0.046	-0.0811
	(0.206)	(0.026)

Table 6
Regression
This table reports the results from estimating the following equation using pooled stock-year data.

$$\sigma_{j,i,t} = \alpha + \beta_1 ln(price_{j,i,t}) + \beta_2 ln(size_{j,i,t}) + \beta_3 Turn_{j,i,t} + \beta_4 Spread_{j,i,t} + \beta_5 MACRO_{j,i,t} + \varepsilon_{i,t}$$

The dependent variables include volatility estimates for each ADR i during year t. I estimate equation (2) separately for each volatility measure j where j is defined as total volatility (Panel A), and idiosyncratic volatility (Panel B). I include as independent variables several control variables. The natural log of the price of ADR i during year t, the natural log of the market capitalization, the share turnover (volume scaled by shares outstanding), and the average daily bid-ask spread. The variable of interest is MACRO, which include the macro-level characteristics. The variables included in *MACRO* are *Corrupt*, *GDP*, *ODA*, *FDI*, and *StockMkt*. I estimate equation (3) using two-way fixed effects. p-values are reported in parentheses below each estimate.

Panel A. Total Volatility					
	[1]	[2]	[3]	[4]	[5]
Intercept	0.0425	0.0453	0.0416	0.0441	0.0411
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(price$_{i,t}$)	-0.0074	-0.0075	-0.0079	-0.0075	-0.0075
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(size$_{i,t}$)	-0.0002	-0.0001	0.0002	-0.0001	-0.0001
	(05166)	(0.7538)	(0.8536)	(0.7183)	(0.7186)
Turn$_{i,t}$	0.0136	0.0135	0.0129	0.014	0.014
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Spread$_{i,t}$	0.0189	0.0197	0.0212	0.0195	0.0197
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corrupt$_{i,t}$	0.0008				
	(0.000)				
GDP$_{i,t}$		0			
		(0.0149)			
ODA$_{i,t}$			0		
			(0.000)		
FDI$_{i,t}$				0	
				(0.536)	
StockMkt$_{i,t}$					0
					(0.7865)
Adj R^2	0.3682	0.3542	0.3711	0.3492	0.3489

Panel B. Idiosyncratic Volatility					
	[1]	[2]	[3]	[4]	[5]
Intercept	0.0458	0.0482	0.0449	0.0475	0.0481
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Ln(price_{i,t})$	-0.0078	-0.0079	-0.0082	-0.0078	-0.0078
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Ln(size_{i,t})$	-0.0004	-0.0003	0.0002	-0.0003	-0.0004
	(01384)	(0.2462)	(0.5011)	(0.2249)	(0.193)
$Turn_{i,t}$	0.0123	0.0123	0.0116	0.0127	0.0127
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Spread_{i,t}$	0.0201	0.0209	0.0223	0.0205	0.0203
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Corrupt_{i,t}$	0.0007				
	(0.000)				
$GDP_{i,t}$		0			
		(0.046)			
$ODA_{i,t}$			0		
			(0.000)		
$FDI_{i,t}$				0	
				(0.3488)	
$StockMkt_{i,t}$					0
					(0.1925)
Adj R^2	0.4100	0.3977	0.4146	0.3951	0.3958